Exhibit C

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPLICANT(s): Vialen, J.

SERIAL NO.: 09/507,804 ART UNIT: 2684

FILING DATE: 2/2/00 EXAMINER: Corsaro, N.

TITLE: METHOD AND ARRANGEMENT FOR MANAGING PACKET DATA TRANSFER IN A CELLULAR SYSTEM

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ATTENTION: BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANTS' BRIEF

(37 C.F.R. §1.192)

This is an appeal from the final rejection of the claims in the above-identified application. A Notice of Appeal was mailed on 5/23/03. The fees required under 37 C.F.R. §1.17 are being submitted herewith. This brief is being submitted in triplicate. The appendix of claims are attached hereto.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is:

Nokia Mobile Phones, Ltd.

II. RELATED APPEALS AND INTERFERENCES

None

III. STATUS OF CLAIMS

Claims 1-22 have been cancelled.
Claims 23-43 are pending in the application.

Claims 23-43 have been finally rejected.

The claims on appeal are 22-43.

IV. STATUS OF AMENDMENTS

Response was filed under 37 CFR 1.116, but was not entered. Note that it was not an amendment.

V. SUMMARY OF INVENTION

The present invention relates to a cellular radio system (Fig. 1), a mobile station (Fig. 8), and a method (Fig. 6) for transferring packet data in the uplink direction, i.e., from the mobile station to the system. The problem with the uplink packet data transfer in the prior art is that the system has no information about the packets to be sent on which to base its channel selection decision. Thus the information about the data packets to be transferred would have to be sent to the system, whereafter the system would have to send the information about the decision on the use of a common vs. dedicated channel

to the mobile station. This information transfer uses up traffic capacity and slows down the transfer of packet data (Page 5, lines 17-23).

In brief, the present invention comprises a channel selection threshold value is sent from the system to the mobile station (630; page 9, line 11, to page 10, line 2). At the mobile station the received threshold value is compared with a current value (650), and then a channel selection decision is made (660; page 10, lines 3-6). Thereafter, a data packet is sent (670, 690). Thus there is a decrease in signal load and the delay in the starting data and transfer is minimized (page 6, lines 7-9).

The present invention as defined by the independent claims is:

23. A method for transferring packet data in the uplink direction (600) from a mobile station (800)to a system (851,852,853, 854, PSTN) in such a manner that:

a common channel (RACH) or a dedicated channel (DCH) is selected for the sending of a data packet, and

the data packet is sent using the channel selected (670, 690), characterized in that

a threshold value of a channel selection parameter is defined (620)

said threshold value of the channel selection parameter is sent to the mobile station (630),

a current value of the channel selection parameter is compared to said threshold value of the channel selection parameter by the mobile station (650), and

said selection is performed on the basis of said comparison (660).

36. A cellular system comprising:

means for sending packet data in the uplink direction from a mobile station (800) to the system (851, 852, 853, 854, PSTN) using a selected channel,

means (803) for selecting a common channel (RACH) or a dedicated channel (DCH) for the sending of a data packet,

characterized in that it also comprises:

means for defining a threshold value of a channel selection parameter (page 9, lines 11-18),

means for sending said threshold value of the channel selection parameter from the system to the mobile station in order to compare said threshold value of the channel selection parameter to a current value of the channel selection parameter (page 9, line 19, to page 10, line 6), and

means (803) for making said channel selection on the basis of said comparison.

37. A mobile station (800) connected with a cellular system (851, 852, 853, 854 PSTN), comprising means (823, 801) for sending uplink packet data to the system using a selected channel, wherein the selected channel is either a common channel (RACH) or a dedicated channel (DCH), characterized in that it also comprises:

means (811) for receiving a threshold value of a channel selection parameter from the system,

means (804) for storing said threshold value of the channel selection parameter, and

means (803) for comparing said threshold value of the channel selection parameter to a current value of the channel selection parameter for basis of said channel selection (page 11, lines 23-27).

VI. ISSUES

Whether claims 23-43 are unpatentable under 35 USC 103 over Wallentin in view of Mann and Wright.

VII. GROUPING OF CLAIMS

The claims do not stand or fall together. The claims are grouped as follows:

Group I - claims 23-27, 29, 31, 33 and 36-43;

Group II - claim 28;

Group III - claim 30;

Group IV - claim 32;

Group V - claim 34; and

Group VI - claim 35.

VIII. ARGUMENT

Wallentin discloses an arrangement for optimization of a packet data connection in a mobile communications system. This optimization can mean, for example, selecting a proper channel type (shared/dedicated). The system and the terminal may exchange measured parameter values with each other for comparing them with threshold values in order to make optimization (channel selection) decisions. (Col. 11. Lines 63-66). However, the threshold value itself is not sent.

Mann discloses a packet data system in which a terminal, after being assigned to a certain channel, receives a broadcast message sent periodically by the system about the selected channel's prevailing load. The terminal may compare the received load figure with a threshold in order to make a

decision about a proper channel for future use. The channels in question are at different frequencies, but otherwise of similar type (PCCH1…PCCHn, shared by a plurality, n*(1-p), of mobile terminals).

Wright discloses a system wherein the utilization of a multiple access channel (uplink) affecting also the overall system stability is increased by introducing a new "dynamic access control" parameter (DAC). In contention based protocol arrangements, a terminal can initiate a data transmission in any slot, thereby resulting in occasional collisions with data emerging from other devices on the same channel at the same instant. Then the following packet retransmissions jam the already overloaded network even more. Wright concentrates on enhancing the capacity of a system using Aloha protocol for adjusting the access control. Upon a first packet transmission failure, the next transmission is delayed with a random factor. If the total number of transmission attempts rises too high, the subsequent retransmission attempts are aborted. The DAC parameter is broadcast in the downlink direction to all terminals utilizing the associated uplink channel. It adjusts the access to the channel by defining the conditions which have to be fulfilled before attempting data transmission. The parameter is generated on the basis of data transmission success/collision statistics.

The problem the current invention solves relates to management of a selection between a common channel and a dedicated channel for transferring packet data in the uplink direction (mobile station to a system). Typically the system that has to allocate a proper channel for the mobile station does not inherently

carry all the necessary information on which to base its decision. Thus the information required must be transmitted from the mobile station to the system, the information indicating current status of, e.g., the data buffer's load. Until now this has been the common solution for the problem being exploited in the prior art solutions as well.

In the proposed solution, however, the aforesaid problem is alleviated with a differing and, in many ways, more favorable technique. The advantages of the invention originate from the fact that threshold value for channel selection, instead of a current value, is transmitted from the system to the mobile terminal.

The terminal may then measure the current value for comparison as often as seen purposeful without causing annoying side-effects. The present invention results, for example, in faster and more accurate channel type transitions especially if the mobile terminal performs the measurements/calculations rapidly. The threshold value may be easily updated whenever needed by the system. As a consequence, the measurement data is not continuously sent over the air, and interface and transmission resources are saved. Additionally, the air interface is not going to be the bottle neck in scenarios wherein the system instantly detects a demand for channel type change, but the message disappointingly finds its way to the terminal a lot later due to the congested air interface. By faster adaptation to the network conditions, the overall system may also achieve a greater throughput.

Measurements would increase the system side load and it is advantageous for the system just to control the comparisons in

the terminals by updating the threshold values if a need arises and let the mobiles execute the real measurements as effectively as they can. Therefore, the suggested approach additionally cuts down the processing need/processing capability requirements from the system side and balances the load originated from the channel allocation/switching procedure between the system and associated terminals.

First of all, motivation for combining all three prior art references in order to achieve the features, the goal: optimization of the uplink channel selection, or other benefits for the present invention, is neither clear nor obvious (see Ex parte Jones, 62 USPQ 2d 1206, 1208). The only issue the documents clearly have in common is the reference to a mobile packet data network. Wallentin relates to a dynamic connection adapting in a GSM/UMTS network. Mann concerns IS-136 standard and a plurality of similar multi-user channels at different frequencies. Wright discloses how to cultivate contention based access procedures, in practice retransmissions, on a single channel with Aloha controlled access in a wireless communications network.

If prior art references are, however, combined, the resulting system will not produce either similar or as diverse a solution when compared to the present invention. The system would comprise first means for selecting a channel type (dedicated/common) according to Wallentin, second means for selecting a proper channel (type unchanged) from the plurality of similar parallel channels according to Mann, and third means for adjusting the retransmissions on a multiple access channel utilizing Aloha protocol according to Wright. The system

would include parameter exchange between its elements in accordance with the references, but certainly not the transmission of the threshold parameter for channel type (common/dedicated) selection, the transmission occurring from the system side to the terminal side. The gap between this combined solution and the one of the present invention has to be considered inventive as it cannot be achieved from any obvious, possibly slightly modified, combined prior art system in a straightforward manner.

Even if a person of average skill performing the combining procedure could somehow surpass his everyday performance and merge the completely differing channel, channel type and within-channel access control procedures of all references together, motivation for that being not likely, in order to achieve a new system variant wherein current parameter values are transmitted between network elements for channel selection like in Wallentin and Mann, the system would still lack the feature of the threshold value provision for switching a channel type. Wright is about defining rules/transmitting threshold parameters for attempting data transmission on a single channel and does not carry any indication for selecting/switching channel types by utilizing transmitted parameters. Thus the solution of Wright would still be used for its original purpose, that is, for adjusting retransmissions over multiple access channel, being one of the channels for selection by current parameter values.

If the same person next came up with one more additional ideas of utilizing the merged parameter transmission of Wallentin and Mann for channel type selection with modified threshold value of Wright instead of a current value in order to achieve the

benefits of the current invention, the procedure would certainly require an additional inventive step because in that case the separate features would have been completely taken out of their original contexts defined by prior art documents; a totally new and different system feature would have been created from scratch. Of course, by exploiting this is kind of thinking almost all emerging inventions can be blocked out as being non-patentable, obvious subject matter, but what are the odds that an average person skilled in the art does these highly complex feature pickings without exceeding his normal skills, without really inventing something novel and non-obvious?

In conclusion, it would not be obvious to combine the references since there is not motivation to do so, and even if the references are somehow combined, the result is not the present invention from such a combination. In particular, the transmission of the threshold value for channel selection purposes feature recited in all independent claims would still be missing from such a combination. Thus a *prima facie* case of obviousness as required by M.P.E.P. 2143 has not been made out.

Thus a reversal of the rejection of claims 23-43 by this Honorable Board is requested.

Claim 28 recites that the channel selection parameter is transmitted on a dedicated channel. Wallentin fails to disclose any specific channel for parameter data transmission, while Mann and Wright use shared channels. For this additional reason, claim 28 is patentable since the use of a dedicated channel has the advantage of making the parameters user equipment independent without wasting broadcast resources.

Claim 30 recites RCL (Radio Link Control) buffers in connection with determining the data packet size used as a channel selection parameter. The references do not disclose this feature of the present invention. However, as RLC is the layer between the actual physical interface and higher level protocol layers (see figure 2), such a buffer selection is an important unobvious feature. RLC manages transmission resources and takes care of segmentation(/reassembly) of upper level packet data units into RLC data blocks. RLC may also handle flow and error control procedures. It is advantageous to monitor the amount of data in the RLC buffer because of its essential functionality and location close to the actual physical radio interface, said buffer selection thus enabling fast and accurate channel (re)selection if needed.

Claim 32 recites sending a threshold value. This also is not in the references. Thus for this additional reason claim 32 is patentable.

Claim 34 recites defining the channel selection parameter to concern only some of the mobile stations in the area (not all, which is the most straightforward solution); this procedure enables "finer grid" in the overall system adjustment affecting load, transfer delays, resource sharing etc. For this additional reason claim 34 is patentable.

Claim 35 recites that the channel selection parameters concern only a single mobile station in an area. This feature has the advantages of claim 34 to an even greater extent and is also missing from the references and not suggested by them. For this additional reason, claim 35 is patentable.

The appendix of claims is attached hereto. A check in the amount of $320 is enclosed herewith for the appeal brief fee. The Commissioner is hereby authorized to charge payment for any additional fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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IX. APPENDIX OF CLAIMS

The texts of the claims involved in the appeal are:

23. A method for transferring packet data in the uplink direction from a mobile station to a system in such a manner that:

a common channel (RACH) or a dedicated channel (DCH) is selected for the sending of a data packet, and

the data packet is sent using the channel selected, characterized in that

a threshold value of a channel selection parameter is defined (620)

said threshold value of the channel selection parameter is sent to the mobile station (630),

a current value of the channel selection parameter is compared to said threshold value of the channel selection parameter by the mobile station (650), and

said selection is performed on the basis of said comparison (660).

24. A method according to claim 23, characterized in that said current value corresponding to the channel selection

parameter is calculated at the mobile station on the basis of the parameters of the data packet to be transferred.

25. A method according to claim 23, characterized in that if the channel selected for the data packet transfer is a dedicated channel (DCH), a channel (DCH) is allocated after the selection, whereafter the data packet is transferred on the allocated channel (DCH).

26. A method according to claim 23, characterized in that said channel selection parameter value is sent on a common channel.

27. A method according to claim 26, characterized in that the channel selection parameter value is sent on one of the following common channels: BCH, FACH, PCH.

28. A method according to claim 23, characterized in that said channel selection parameter value is sent on a DCH.

29. A method according to claim 23, characterized in that one or more of the following parameters are used in the channel selection:

-size of data packet,

-maximum allowed data packet size on the RACH,

-bit rate required,

-allowed transfer delay,

-priority of data to be transferred,

-load on the transfer channel, and

-transmit power level required on the RACH.

30. A method according to claim 29, characterized in that the size of data packet is determined on the basis of amount of data in RLC buffers.

31. A method according to claim 23, characterized in that the channel selection parameter value sent to the mobile station is one or several of the following:

-maximum allowed data packet size on the RACH,

-load on the transfer channel, and

-maximum allowed power level on the RACH.

32. A method according to claim 30, characterized in that the channel selection parameter value sent to the mobile station is a threshold value for the data in the RLC buffer(s).

33. A method according to claim 23, characterized in that the channel selection parameters are defined so as to concern all mobile stations in the area in which the parameters are sent.

34. A method according to claim 23, characterized in that the channel selection parameters are defined so as to concern a subset of all mobile stations in the area in which the parameters are sent.

35. A method according to claim 23, characterized in that the channel selection parameters are defined so as to concern a single mobile station.

36. A cellular system comprising:

-means for sending packet data in the uplink direction from a mobile station to the system using a selected channel,

-means for selecting a common channel (RACH) or a dedicated channel (DCH) for the sending of a data packet,

characterized in that it also comprises:

-means for defining a threshold value of a channel selection parameter, ,

-means for sending said threshold value of the channel selection parameter from the system to the mobile station in order to compare said threshold value of the channel selection parameter to current value of the channel selection parameter, and

-means for making said channel selection on the basis of said comparison.

37. A mobile station connected with a cellular system, comprising means for sending uplink packet data to the system using a selected channel, wherein the selected channel is either a common channel (RACH) or a dedicated channel (DCH), characterized in that it also comprises:

-means for receiving a threshold value of a channel selection parameter from the system,

-means for storing said threshold value of the channel selection parameter, and

-means for comparing said threshold value of the channel selection parameter to a current value of the channel selection parameter for basis of said channel selection.

38. A mobile station according to claim 37, characterized in that it further comprises:

-means for making said channel selection on the basis of the result of said comparison.

39. A mobile station according to claim 37 characterized in the it comprises:

-means for calculating a value corresponding to the channel selection parameter on the basis of the parameters of the data packet to be sent,

-means for comparing a current value of the last channel selection parameter sent to the mobile station to said calculated value of the channel selection parameter, and

-means for making said channel selection on the basis of said comparison.

40. A mobile station according to claim 39, characterized in that said value corresponding to the channel selection parameter is the amount of data in the RLC buffer(s), said last current value of the last channel selection parameter is a threshold value for the amount of data in the RLC buffer(s).

41. The use of the method of claim 23 in a UMTS system.

42. A cellular system of claim 36 characterized in that it is a UMTS system.

43. The use of the mobile station of claim 37 in a UMTS system.